

REMARKS

Claims 19-33 were previously cancelled. Accordingly, Claims 1-18 are pending. Claim 1 is presently amended. An unexecuted 37 CFR 1.132 Declaration of Dr. Pieter L. Buwalda accompanies this Amendment. An executed copy will follow shortly.

Present Invention and Claim Amendments

The snack products of the present invention comprise potato flakes and/or granules. Flakes and/or granules are pieces of whole potatoes. The starch of these pieces have a high amylopectin content. Claim 1 recites that the amylopectin content of the starch of these pieces is at least 95 wt%.

A starch with an amylopectin content of at least 95 wt% implies that the starch has a low amylose content. However, the examiner states that “the features upon which applicant relies (*i.e.*, a lack of amylose) are not recited in the rejected claim(s).” (See Office action page 8, 2nd paragraph.) To address the examiner’s concern, Claim 1 is presently amended to recite that the starch has an amylose content of less than 5 wt%. (Support for this amendment can be found throughout the specification, including page 3, lines 9-19; page 4, lines 15-18; page 10, lines 14-18; and page 12, lines 2 and 7.)

One of the features of the present invention is that snack foods comprising potato pieces with high amylopectin starch provide an unexpectedly **increased expansion**. Claim 1 has presently been amended to recite that the high amylopectin starch snack food is at least 7% more expanded than a snack food comprising potato pieces with starch that has a normal amylopectin

content. (Support for this amendment can be found throughout the specification, including page 23, lines 18-19.)

The examples of the present application clearly demonstrate such increased expansion. In particular, see the tables on pages 16 and 19. These tables show that replacing potato flakes/granules of normal amylopectin content with potato flakes/granules of high amylopectin content provides an increase in expansion. See page 5, lines 4-9, of the specification.

Rejection under 35 U.S.C. §103 in View of *Villagran* and *Tallberg* or *Stahl*

Claims 1-9 and 15-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Martines-Serna Villagran *et al.* (U.S. Patent No. 6,544,580, hereinafter "*Villagran*."") in view of either Tallberg *et al.* (U.S. Patent No. 5,824,798); or Stahl (U.S. Patent No. 5,759,597). (See Office Action pages 2-3, paragraph 3, and pages 4-5, paragraph 5.)

***Villagran* does not teach, or suggest, high amylopectin starch**

The Examiner states that it would have been obvious to incorporate the high amylopectin starch of *Tallberg* or *Stahl* into the process of *Villagran* since *Villagran* "used starch with a higher amylopectin content of about 84%." (Office Action p. 3, middle of page, and p. 5, top of page.) Applicants respectfully assert that the Examiner has misinterpreted the teachings of the *Villagran*.

The Examiner attempts to support that *Villagran* teaches a potato flake with an “increased amylopectin content” by two descriptions in *Villagran*. Applicants respectfully assert that the Examiner’s analysis is flawed as discussed below.

Examiner’s first flawed reason that *Villagran* teach increased amylopectin content

One of the reasons the Examiner believes that *Villagran* teaches a potato flake with an “increased amylopectin content” is because *Villagran* describes blanching and preconditioning. (Office Action, sentence bridging pages 2 and 3.) Applicants respectfully disagree with the Examiner’s analysis.

"Pre-conditioned" refers to treatments such as blanching which toughen cells thereby requiring additional energy to cook the potato pieces properly. *Villagran* does state that preconditioning of the potato pieces/slabs causes the resulting potato flakes to have lower measurable amylose content *than* potato flakes produced from potato pieces/slabs that have not been pre-conditioned. However, “a lower measurable amylose content” does not mean a high amylopectin content; and it especially does not mean an amylopectin content of at least 95 wt.%.

Significantly, *Villagran* states that the controlled cooking process of their invention is still required after preconditioning. (See col. 7, lines 22-24.) Such a cooking process would not be applicable to potato pieces in which the starch has a low amylose content. That is, in the controlled cooking process, amylose is removed from the starch granules (but not from the pieces). Such process is **not** applicable to flakes from potatoes with virtually no amylose. Thus, **the preconditioned potato pieces/slabs of Villagran must have low amylopectin content.**

A further description of the *Villagran* controlled cooking process follows.

In paragraph 7 of his October 25, 2006 declaration, Dr. Buwalda describes the controlled cooking process of *Villagran*:

Villagran et al. describe a process for the production of potato flakes that results in the control of the physical properties of the flakes....The trick of the cooking process of *Villagran et al.* is to ensure that amylose is not entrapped in the amylopectin upon gelatinization because that would yield a sticky dough. In the process, amylose is removed from the starch granules; but remains in the flake.

Significantly, in their process, *Villagran* does not instruct the removal of amylose from the potato flake. More specifically, since the *Villagran* process does not include a washing step, amylose is not removed; and consequently, the amylose content of the flakes is not affected.

Instead of removal of amylose from a potato flake, *Villagran* describes the quantification of free starch. In paragraph 7 of his October 25, 2006 declaration, Dr. Buwalda describes the quantification process of *Villagran*.

Villagran et al. describe how their process can be quantified. Included in this quantification is a measurement of free starch, *i.e.*, free amylose. A low amount of free amylose indicates a higher amount of amylose remaining in the starch granules; and analogously, a high amount of free amylose indicates a low amount of amylose in the granules. However, since amylose is not removed from the potato flakes, the total amount of amylose in the flake is virtually unaffected.

In paragraph 8 of his October 25, 2006 declaration, Dr. Buwalda states that it is apparent that the potato flakes used by *Villagran* do **not** have a high amylopectin content. His conclusion is based on the fact that "[t]he process described by *Villagran et al.* is **not** applicable to flakes from potatoes with virtually no amylose...[I]f there is virtually no amylose, then there is no need

to remove it from the starch granule.” Thus, clearly Villagran only teach potato flakes with a normal level of amylopectin. See paragraph 8 of the declaration. A normal level of amylopectin is about 75 wt.% amylopectin, not 84 wt.% amylopectin.

Examiner’s second flawed reason that Villagran teach increased amylopectin content

The second reason the Examiner believes that *Villagran* teaches a potato flake with an “increased amylopectin content” is because the Examiner believes that *Villagran* discloses flakes having an amylopectin content of 84 wt.%. (See Office Action page 3.) *Villagran* does not have such a disclosure, as explained below.

The Examiner incorrectly infers from a content description in *Villagran*. In particular, the Examiner incorrectly infers that the balance of the flake content which is not specifically enumerated by *Villagran* is amylopectin. That is, *Villagran* states “The resulting dehydrated potato flakes comprise from about 19% to about 27% amylose, from about 5% to about 10% moisture, at least about 0.1% emulsifier and a water absorption index of from about 7.7 to about 9.5.” (See col. 6, lines 49-52.) The Examiner incorrectly infers that the balance of the flake content is amylopectin. It is common knowledge in the art that potato flakes contain about 20 wt.% non-starch components, such as proteins, fibers, non-reducing sugars and amino acids. Thus, the amylopectin content in the flakes of the *Villagran* must be considerably less than 84 wt.%. See paragraph 9 of the October 25, 2006 declaration.

Similarly, in the embodiment which uses “preconditioned” potato pieces, the amylopectin content in the flakes must be considerably less than 84 wt.%. *Villagran* state that the dehydrated potato flakes resulting from the pre-conditioned process comprise from about 16% to about 20% amylose, from about 5% to about 10% moisture, at least 0.1% emulsifier, and a water absorption

index of from about 6.7 to about 8.3. (See col. 7, lines 30-34.) See paragraph 9 of the October 25, 2006 declaration.

Thus, the Examiner erroneously states that *Villagran* teaches that the preferred potato flake used in their method has an “increased amylopectin content.”

Villagran fails as a primary reference

Thus, the Examiner incorrectly interpreted *Villagran* as teaching that a potato with a high amylopectin content was preferred in their method. Accordingly, the primary reference fails to teach the element of the claimed invention that the Examiner asserts is taught by the reference. In such a case, secondary references (*Tallberg* and *Stahl*), in combination with the primary reference or by themselves, cannot support the obviousness rejections. Therefore, the obvious rejection is not viable, and Applicants respectfully requests that it be withdrawn.

Moreover, even if *Villagran* taught what the Examiner erroneously believe it teaches (*i.e.*, 84 wt% amylopectin), the pending claims recite an amylopectin content of at least 95 wt.% which is quantitatively and qualitatively very different from 84 wt.%.

Combining Villagran with Tallberg and Stahl do not produce present invention.

Furthermore, the secondary references of *Tallberg* and *Stahl* do not remedy the deficiencies in *Villagran* for other reasons. *Tallberg* and *Stahl* teach isolated high amylopectin potato starch. They do not teach high amylopectin potato flakes or granules to make a food product. Accordingly, a skilled artisan combining the three cited references would not produce the present invention. At most, the skilled artisan would use the isolated starch of *Tallberg* or

Stahl as an “other starch-containing ingredient” described by *Villagran* and combine it with the potato flake of normal amylopectin content as described by *Villagran* to form a dough composition.

High amylopectin potato starch was available but Villagran chose not to use it

Also, it is significant that although high amylopectin potato starch was available per *Tallberg* or *Stahl*, *Villagran* chose not to use it. Such observation is consistent with the fact that *Villagran* emphasize throughout their patent that high amylopectin content is undesirable. For example, *Villagran* emphasizes that the flakes resulting from the invention “can be used to prepare a more cohesive, non-adhesive, machineable dough.” The starch that produces this “undesirable” sticky dough is starch with high amylopectin levels. (See col. 5, lines 15-19.)

No motivation to combine Villagran and Tallberg or Stahl

Finally, there would have been no motivation to combine the cited references to produce the present invention. It is surprising that the use of potato flakes and/or granules with high amylopectin starch content provides an unexpectedly increased expansion in snack foods. None of the cited references even hint at such an expansion.

Also, *Villagran* emphasizes throughout the patent that high amylopectin content is undesirable. For example, *Villagran* emphasizes that the flakes resulting from their invention “can be used to prepare a more cohesive, non-adhesive, machineable dough.” The starch that produces this “undesirable” sticky dough is starch with high amylopectin levels. (See col. 5, lines 15-19.)

Accordingly, Applicants request withdrawal of this obviousness rejection.

Rejection under 35 U.S.C. §103 in View of Villagran and Tallberg or Stahl, and Jeffcoat

Claims 10-14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Villagran* in view of *Tallberg or Stahl*, and further in view of U.S. Patent No. 6,541,060 (*Jeffcoat et al.*). The Examiner cites *Jeffcoat* as teaching “a food product comprising less than 10% pregelatinized waxy potato starch.” (Office Action page 3, paragraph 4, and page 5, paragraph 6.)

Since the claims upon which Claims 10-14 depend are not obvious over *Villagran* in view of *Tallberg or Stahl*, as discussed above, the further disclosure by *Jeffcoat* does not render Claims 10-14 obvious. Accordingly, Applicants request withdrawal of this obviousness rejection.

Rejection under 35 U.S.C. §103 in View of Villagran and the Buwalda article

Claims 1-9 and 15-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Villagran* in view of the Buwalda article (“Sheer Versatility” *Potato Business World* May/June 1998). The Examiner states that the Buwalda article discloses that amylopectin potato starch “provides improved expansion properties in snack foods” and thus “would have eliminated the need for blanching and pre-conditioning in *Villagran et al.* in order to increase the amylopectin content.” (See Office Action sentence bridging pages 6 and 7.)

As discussed above, the Examiner incorrectly interpreted *Villagran* as teaching that a potato with a high amylopectin content was preferred in their method. Accordingly, the primary

reference fails to teach the element of the claimed invention that the Examiner asserts is taught by the reference. In such a case, a secondary reference (the Buwalda article), in combination with the primary reference or by itself, cannot support the obviousness rejection. Therefore, the obvious rejection is not viable, and Applicants respectfully requests that it be withdrawn

Furthermore, the secondary reference of the Buwalda article does not remedy the deficiencies in *Villagran*. The Buwalda article teaches isolated high amylopectin potato starch. It does not teach high amylopectin potato flakes or granules to make a food product. Accordingly, a skilled artisan combining *Villagran* with the Buwalda article would not produce the present invention. At most, the skilled artisan would use the isolated starch of the Buwalda article as an "other starch-containing ingredient" described by *Villagran* and combine it with the potato flake of normal amylopectin content as described by *Villagran* to form a dough composition.

Accompanying this Amendment is a 1.132 Declaration by the author of the Buwalda article, *i.e.*, Dr. Buwalda. In his declaration, Dr. Buwalda corroborates that his article only addresses **isolated** starch. However, even without Dr. Buwalda's declaration, it is clear from the article itself that only isolated starch is addressed. In the article, starch is discussed as a chemical, which may be suspended or dissolved, and derivatized. A skilled artisan of starch chemistry would not refer to starch in such a manner if he were discussing starch which is still contained in potato pieces (flakes, slabs or granules). Also see page 11, the middle column, first paragraph where it is stated: "As potato starch is a mixture of amylopectin and amylose, solutions have a tendency to retrograde." This statement cannot relate to potato pieces which also contain 20 wt.% of non-starch components such as proteins, fibers, non-reducing sugars and amino acids. Also, see page 12, 1st column, 3rd paragraph, which discusses the "solubility" of starch in hot and cold water.

Also, Claim 1 has been amended to recite that “the snack food is at least 7% more expanded than a snack food comprising potato flakes and/or granules which comprise natural starch ...” Although the Buwalda article may have mentioned that the amylopectin potato starch may give some expansion properties, it was not obvious that the expansion would be as high as at least 7%.

Moreover, it is significant that although high amylopectin potato starch was available per the Buwalda article, *Villagran* chose not to use it. Such observation is consistent with the fact that *Villagran* emphasize throughout their patent that high amylopectin content is undesirable. For example, *Villagran* emphasize that the flakes resulting from their invention “can be used to prepare a more cohesive, non-adhesive, machineable dough.” The starch that produces this “undesirable” sticky dough is starch with high amylopectin levels. (See col. 5, lines 15-19.)

Finally, there would have been no motivation to combine the cited references to produce the present invention. It is surprising that the use of potato flakes and/or granules with high amylopectin starch content provides an unexpectedly increased expansion in snack foods. None of the cited references even hint at such an expansion.

Also, *Villagran* emphasizes throughout the patent that high amylopectin content is undesirable. For example, *Villagran* emphasizes that the flakes resulting from their invention “can be used to prepare a more cohesive, non-adhesive, machineable dough.” The starch that produces this “undesirable” sticky dough is starch with high amylopectin levels. (See col. 5, lines 15-19.)

Accordingly, Applicants request withdrawal of this obviousness rejection.

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Rejection under 35 U.S.C. §103 in View of *Villagran* and the Buwalda article and *Jeffcoat*

Claims 10-14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Villagran* in view of the Buwalda article, and further in view of *Jeffcoat*. The Examiner cites *Jeffcoat* as teaching "a food product comprising less than 10% pregelatinized waxy potato starch." (Office Action page 7, paragraph 8.)

Since the claims upon which Claims 10-14 depend are not obvious over *Villagran* in view of the Buwalda reference, as discussed above, the further disclosure by *Jeffcoat* does not render Claims 10-14 obvious. Accordingly, Applicants request withdrawal of this obviousness rejection.

Applicants respectfully submit that the application is now in condition for allowance, which action is earnestly solicited. If resolution of any remaining issue is required prior to allowance of this application, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectively submitted,



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